

TEXAS FFA ASSOCIATION LEADERSHIP DEVELOPMENT EVENTS



AG ISSUES AND CURRENT EVENTS BRIEFS

2021 Chapter Agricultural FFA Quiz LDE

2021-22 Texas FFA Officer Candidate Testing

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What Is The Farm Bill?

Source: <http://sustainableagriculture.net/our-work/campaigns/fbcampaign/what-is-the-farm-bill/>

<https://www.congress.gov/bill/115th-congress/house-bill/2>

<https://www.agriculture.senate.gov/imo/media/doc/Conference%20Report%20Summaries.pdf>

<https://www.fb.org/market-intel/reviewing-the-2018-farm-bill-baseline>

The Agriculture Improvement Act of 2018 (commonly known as the farm bill) reauthorizes through Fiscal Year 2023 and modifies Department of Agriculture (USDA) programs that address:

- Commodity support
- Conservation
- Trade and international food aid
- Nutrition assistance
- Farm credit
- Rural development
- Research and extension activities
- Forestry
- Energy
- Horticulture
- Crop insurance

The bill modifies agriculture and nutrition policies to:

- Require farmers to make a new election to obtain either Price Loss Coverage or Agricultural Risk Coverage for the 2019-2023 crop years, which may be changed for the 2021-2023 crop years;
- Replace the Dairy Margin Protection Program with Dairy Risk Coverage and modify coverage levels and premiums;
- Make Indian tribes and tribal organizations eligible for supplemental agricultural disaster assistance programs;
- Reduce the adjusted gross income limitation for receiving benefits under commodity and conservation programs;
- Modify funding levels and requirements for several conservation programs;
- Consolidate several existing trade and export promotion programs into a new Priority Trade Promotion, Development, and Assistance program;
- Legalize industrial hemp and make hemp producers eligible for the federal crop insurance program;
- Establish an interstate data system to prevent the simultaneous issuance of Supplemental Nutrition Assistance Program (SNAP, formerly known as the food stamp program) benefits to an individual by more than one state;
- Increase the loan limits for farm ownership and operating loans;
- Modify the experience requirement for farm ownership loans;
- Authorize a categorical exclusion from requirements for environmental assessments and environmental impact statements for certain forest management projects with the primary purpose of protecting, restoring, or improving habitat for the greater sage-grouse or mule deer;
- Modify the organic certification requirements for imported agricultural products

The farm bill connects the food on our plates, the farmers and ranchers who produce that food, and the natural resources – our soil, air and water – that make growing food possible. The farm bill is a package of legislation passed roughly once every five years, which has a tremendous impact on farming livelihoods, how food is grown, and what kinds of foods are grown. Covering programs ranging from crop insurance for farmers to healthy food access for low-income families, from beginning farmer training to support for sustainable farming practices, the farm bill sets the stage for our food and farm systems. As a leading advocate for family farmers and sustainable agriculture, it's our job to make sure that this important bill is good for farmers, good for consumers, and good for the natural environment.

Every five years, the farm bill expires and is updated: proposed, debated, and passed by Congress and then signed into law by the President. The current farm bill, The Agricultural Act of 2018, was signed into law on December 20, 2018.

The farm bill got its start in 1933 as part of President Franklin Delano Roosevelt’s New Deal legislation. Its three original goals – to keep food prices fair for farmers and consumers, ensure an adequate food supply, and protect and sustain the country’s vital natural resources – responded to the economic and environmental crises of the Great Depression and the Dust Bowl. Although the farm bill has changed in the last 70 years, its primary purposes are the same.

Our food and farming system confronts new challenges today, but through citizen and stakeholder action for a fair farm bill, we can ensure the vibrancy and productivity of our agriculture, economy, and communities for generations to come.

1. What does the farm bill cover?

The farm bill’s sections are called titles. The 2018 Farm Bill has twelve titles.

Title 1: Commodities. The Commodity Title provides certainty and predictability to eligible producers by reauthorizing and improving commodity, marketing loan, sugar, dairy, and disaster programs.

Title 2: Conservation. The Conservation Title maintains the core voluntary conservation programs that farmers and ranchers use to improve their productivity and address natural resource concerns. Building upon the 2014 Farm Bill, this proposal increases program flexibility, expands public-private partnerships to leverage additional private investment in locally-led conservation initiatives, and provides conservation opportunities for farmers and ranchers to help them improve water quality, address drought, enhance wildlife habitat, and address other related natural resource concerns.

Title 3: Trade. The Trade Title covers food exports, trade programs, and international food security programs.

Title 4: Nutrition. The Nutrition Title covers the Supplemental Nutrition Assistance Program [SNAP] – also known as food stamps – as well as a variety of smaller nutrition programs to help low-income Americans afford food for their families.

Title 5: Credit. The Credit Title covers federal loan programs designed to help farmers access the financial credit (via direct loans as well as loan guarantees and other tools) they need to grow and sustain their farming operations.

Title 6: Rural Development. The Rural Development Title contains reauthorizations and modifications of various programs, including the Farm Bill Broadband Program, the Community Connect Program, the Community Facilities Program and the Water, Waste Disposal and Wastewater Facility Grants and Loans Program. The bill also reestablishes the Undersecretary for Rural Development. Essentially, this title covers programs that help foster rural economic growth through rural business and community development (including farm businesses), housing, and infrastructure improvement.

Title 7: Research. The Research Title covers farming and food research, education, and extension programs designed to support innovation, from state university-affiliated research to vital training for the next generation of farmers and ranchers.

Title 8: Forestry. The Forestry Title covers forest-specific conservation, creating incentives and programs that help farmers and rural communities to be stewards of forest resources.

Title 9: Energy. The Energy Title covers programs that encourage growing and processing crops for biofuel; help farmers, ranchers and business owners install renewable energy systems; and support research related to energy.

Title 10: Horticulture. The term “specialty crops” refers to fruits, vegetables, nuts, and nursery crops, including organic produce. This title covers farmers market and local food programs, funding for research and infrastructure specific to those “specialty crops”, and organic research and certification programs.

Title 11: Crop Insurance. The Crop Insurance Title provides certainty and predictability to producers by improving risk management tools and crop insurance coverage, and by encouraging private sector innovation in the development and maintenance of policies.

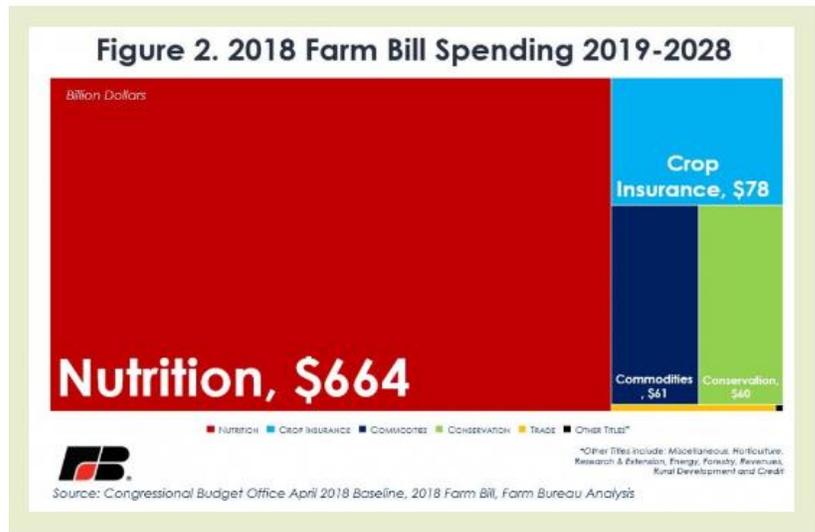
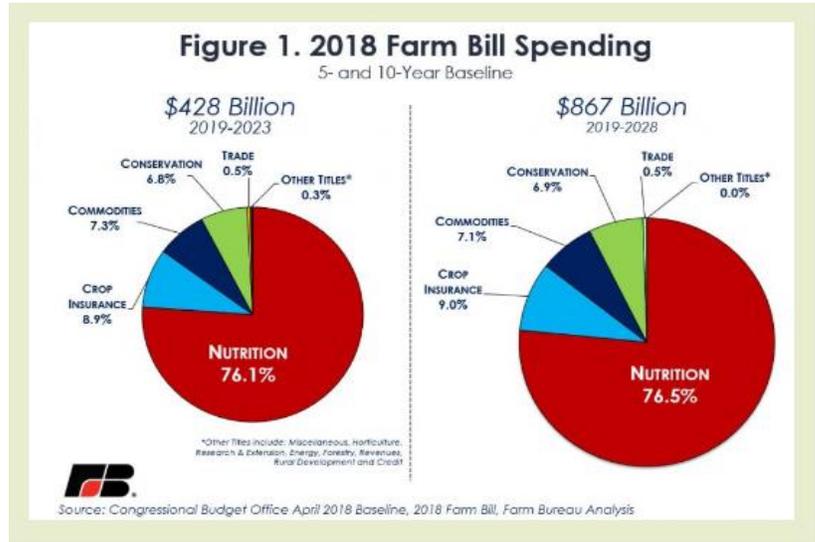
Title 12: Miscellaneous. The Miscellaneous Title brings together advocacy and outreach programs for beginning, socially disadvantaged, and veteran farmers and ranchers; agricultural labor safety and workforce development; and livestock health.

2. How much does the farm bill cost?

The projected baseline for agriculture and nutrition programs would be \$428 billion over five years (2019-2023) and \$867 billion over 10 years (2019-2028), according to the USDA Economic Research Service using data from the Congressional Budget Office, Cost Estimates for the Agricultural Act of 2018, December 2018.

Between years 2019 to 2023, more than 76 percent of farm bill spending, or \$326 billion, is projected to go toward nutrition programs. Following nutrition spending are outlays related to crop insurance, commodity programs such as Agriculture Risk Coverage, Price Loss Coverage and Dairy Margin Coverage, and then conservation programs. These three agriculture-related titles total \$99 billion and represent 23 percent of the total farm bill baseline. Other titles such as Trade, Miscellaneous, Horticulture, Research & Extension, Energy, Forestry, Revenues, Rural Development and Credit account for less than 1 percent of the farm bill baseline at \$3.5 billion.

Over a 10-year period the largest share of projected farm bill expenditures belongs to the nutrition title. Projected spending on nutrition programs is \$664 billion, representing 76.5 percent of all farm bill spending. Crop insurance, conservation and commodity programs account for \$199 billion, or 23 percent, of projected outlays. The remaining titles represent one-half of 1 percent at \$4.3 billion. Figures 1 and 2 identify the baseline for agriculture and nutrition programs.



3. Who in Congress writes the farm bill?

Members of Congress who sit on the Senate and House Committees on Agriculture, Nutrition, and Forestry hold the primary responsibility of drafting farm bills.

4. How does the farm bill process work?

There are four main phases of the farm bill process, from drafting the new legislation to putting the programs into effect on the ground. Here’s how it works:

First – Reauthorization - The Reauthorization phase, in which a new farm bill is written and passed into law approximately every five years.

Hearings

It all begins with hearings (in Washington, DC and across the country) – these are listening sessions where members of Congress take input from the public about what they want to see in a new bill.

Agricultural Committees

House and Senate Agriculture Committees each draft, debate, “markup” (amend and change), and eventually pass a bill; the two committees work on separate bills that can have substantial differences.

Full Congress / “The Floor”

Each committee bill goes next to “the floor” – the full House of Representatives or Senate. Each bill is debated, amended, and voted on again by its respective body (House or Senate).

Conference Committee

After both the full House and Senate have passed a farm bill – which can take a while, and may require a bill being sent back to committee for more work before passage – the two bills (House and Senate) go to a smaller group of Senators and Representatives called a “conference committee,” which combines the two separate bills into one compromise package. Conferees are typically chosen mostly from House and Senate Agriculture Committee members.

Full Congress / “The Floor”

The combined version of the conference committee’s farm bill then goes back to the House and Senate floors to be debated – and potentially passed.

Last Step: The White House

Once the House and Senate approve a final farm bill, the bill goes to the President, who can veto it (and send it back to Congress) or sign it into law.

Second – Appropriations - Once the farm bill is signed into law, it’s time for the Appropriations phase; This means setting money aside in the yearly federal budget to fund the programs in the farm bill.

Some programs are written into the farm bill with mandatory money – meaning it comes to them automatically every year; other programs have discretionary money – meaning agriculture appropriators must decide each year how much funding (if any) to award a program.

Though the farm bill expires and is reauthorized every 5 years or so, appropriations takes place each year. The farm bill includes language specifying authorized, or allowed, funding for each year the bill is in place – but authorized funding isn’t the same as appropriated funding. The Sustainable Agriculture Research and Education (SARE) Program, for example, has been authorized at \$60 million per year since it was first introduced in 1985, but has not yet been funded above \$25 million per year.]

1. First, the president’s budget request is sent to Congressional budget committees for their consideration. The committees each draft their own budget resolutions, and then pass a combined budget.
2. Next, the process moves to the House and Senate Appropriations Committees, responsible for determining program-by-program funding levels across all areas of the US budget.
3. Within the House and Senate Appropriations Committees are Agricultural Appropriations Subcommittees – the people responsible for designating farm, food, and rural development program funding. The Subcommittees get input for their funding decisions in a few ways:
 - by holding public hearings and inviting testimony from experts and agencies
 - by requesting and considering funding requests from all non-committee legislators and staff
 - by meeting with constituents and advocates of programs to discuss funding priorities.
4. From this input, the subcommittee staff puts together a proposed agriculture appropriations bill that the subcommittee will vote on. Once passed by the subcommittee, these bills are submitted to the full Appropriations Committees, generally in the summer or fall, where they go through another round of review and changes called “markup”.

5. Much like with the farm bill, differences in House and Senate appropriations bills get sorted out via a small group of legislators called the conference committee, which has an October 1st deadline each year. When a compromise is made, a final bill emerges, and is signed into law by the President. Because budgeting is such contentious business, this deadline is not often met, in which case “continuing resolutions” are passed to maintain existing funding levels.

Third – Rulemaking - Happening concurrently with the annual appropriations process is rulemaking. After Congress passes a farm bill, the U.S. Department of Agriculture (USDA) is charged with writing the actual rules for how these programs will be implemented on the ground. This phase is called Administration or Rulemaking.

Wins for sustainable agriculture in the farm bill require vigilant attention during this phase to ensure that programs are implemented in a way that reflects the intent of Congress – and of the farmers and advocates who helped shape the bill. Advocates and experts check in with agency staff at USDA, track the status of particular programs, and share their input. Grassroots individuals have a major role to play during this stage, by commenting on USDA’s proposed rules for farm bill programs.

Proposed agency rules are published in the Federal Register and are usually open for public comment from 30-90 days. When rules are posted, NSAC and its member groups will provide example comments that grassroots individuals can use in formulating their own responses.

Fourth - Outreach and Evaluation - And always, when program funding is appropriated and rules are set in place for implementation, it’s time for outreach and evaluation!

Here is the true test of program success: do farmers, ranchers, and grassroots organizations use the program? Does the program accomplish its goals and reach the people it is meant to reach on the ground? Is it having an impact?

At this phase, grassroots organizations and USDA both promote funding opportunities, requests for grant proposals, and sign-ups for programs. Spreading the word is important to make sure everyone hears about programs and can access the information needed to participate.

And following up on the successes and challenges of specific farm bill programs is another key step in improving our food and farming system. By sharing evaluation and feedback on farm bill programs, farmers and constituents give lawmakers and agencies the information they need to fix any problems in the bill, and to work towards building a better farm bill for everyone.

2018 Farm Bill Wins

By the National Farmers Union

Source: <https://montanafarmersunion.com/wp-content/uploads/2019/01/Farm-Bill-Wins-1-pager-option-2.pdf>

Farm Safety Net -- The Farm Bill makes a number of moderate improvements to the farm safety net. While it maintains Price Loss Coverage (PLC) reference prices, it establishes an “effective reference price” that would strengthen PLC and Agriculture Risk Coverage (ARC) if a commodity’s price remains high for multiple years. The bill also makes improvements to smooth county disparities in ARC, allows farmers to update their payment yields, and provides the opportunity to make an annual election for ARC and PLC.

Dairy Safety Net - The Farm Bill replaces the Dairy Margin Protection Program (MPP) with the similar Dairy Margin Coverage Program (DMC) and makes a number of improvements to make the dairy safety net more attractive for small and medium-sized dairies. The bill allows producers to use DMC and the Livestock Gross Margin Program (LGM) on the same production. Additionally, it allows producers to cover margins up to \$9.50 on their first five million pounds and it allows for the repayment of a portion of premiums paid for MPP over 2014-2017.

Conservation - The bill increases Conservation Reserve Program (CRP) acreage to 27 million by 2023 and places common sense limits on rental payments. It also clarifies emergency haying and grazing designations, providing more consistency for farmers and ranchers in drought-stricken areas. It also establishes a Soil Health and Income Protection Program pilot, giving farmers and ranchers a short-term, flexible land idling option.

Working Lands - While the final bill reduces overall funding for the Environment Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP), it maintains and improves each program. The bill authorizes a supplemental payment for advanced grazing management within CSP and ensures that supplemental payments for grazing management and resource-conserving crop rotations pay at least 150% of the practice cost. It also authorizes a conservation planning assessment within EQIP, creating a gateway to conservation.

Climate Change - The bill expands the purposes of CSP and EQIP to include weather volatility mitigation and adaptation, leveraging both programs in farmers' and ranchers' fight against the effects of a changing climate. It also establishes a Carbon Utilization Education Program that aims to expand opportunities for family farmers and ranchers to divert on-farm wastes into renewable energy production.

Diverse Markets - The Farm Bill preserves the funding and structure of existing programs that expand access to local and value-added markets. It preserves the Farmers Market Promotion Program (FMPP), the Local Foods Promotion Program (LFPP) and the Value Added Producer Grants program (VAPG) under the new Local Agricultural Markets Program (LAMP). LAMP has permanent baseline funding and provides additional funding for food safety cost share and regional initiatives.

Organics - The Farm Bill preserves the National Organic Certification Cost-Share Program (NOCCSP), providing \$24 million in new funding and rolling over another \$16.5 million from the previous farm bill. It also reauthorizes the Agricultural Management Assistance program, which, among other purposes, provides organic certification cost-share.

Farm Stress - As the declining farm economy drives increasing stress in farm country, the Farm Bill reauthorizes the Farm and Ranch Stress Assistance Network (FRSAN). FRSAN will provide funding for helplines and websites, training for farm advocates, support groups, outreach, and home delivery of assistance in an effort to better support farmers, ranchers, and farmworkers in tough times. The bill also reauthorizes the State Agricultural Mediation Program and expands its uses to include farm transitions, farmer-neighbor disputes and organic disputes.

Opioid Misuse - The Farm Bill leverages existing Rural Development programs to help rural communities better address the challenges associated with the opioid epidemic. It establishes a set-aside within the Distance Learning and Telemedicine (DLT) program for opioid treatment services. Additionally, the bill grants priority to opioid prevention, treatment and recovery within the Community Facilities Direct Loan and Grant program and the Rural Health and Safety Education Competitive Grants program.

New Farmers - The bill provides permanent funding for the Beginning Farmer and Rancher Development Program (BFRDP) and the "2501" program for socially disadvantaged, veteran, and beginning farmers and ranchers through the new Farming Opportunities Training and Outreach (FOTO) program. It also establishes a Beginning Farmer and Rancher Coordinator at the national level and in each state.

U.S.-Mexico-Canada Agreement (USMCA)

Source: <https://www.fb.org/issues/trade/usmca/>

Issue at a Glance

On September 30, 2018, Canada joined the U.S. and Mexico in the successor to NAFTA, the U.S.- Mexico - Canada Agreement (USMCA). NAFTA removed barriers to intraregional trade, including agricultural products traded between Mexico and the U.S. and most agricultural products traded between the U.S. and Canada since it was implemented in 1994. Agricultural exports from the U.S. to Canada and Mexico increased from \$8.9 billion in 1993 to \$39 billion in 2017. The USMCA not only locks in market opportunities previously developed with our North American neighbors, but also builds on those trade relationships in several key areas.

Background

NAFTA is a comprehensive economic and trade agreement that established a free-trade area between the U.S., Canada and Mexico. Tariff elimination between the United States and Canada did not extend to Canadian imports of dairy and poultry products. Tariff-rate quotas (TRQs) for these products were established to comply with WTO requirements. Tariffs were eliminated for all products between the U.S. and Mexico.

In the new USMCA, Canada has agreed to phase-in increased quota access for U.S. dairy products (fluid milk, cream, butter, skim milk powder, cheese and other dairy products) and for chicken, eggs and turkey. The increased dairy access 100,000 metric tons annually is estimated to be worth \$242 million. The new amounts will be reached by year six of the agreement. There will then be one percent growth per year for an additional 13 years. The U.S. now exports \$619 million in dairy products to Canada annually.

Canada has also agreed to end their Class 7 pricing scheme, within six months of the implementation of the USMCA. A substitute pricing formula for skim milk solids used to produce nonfat dry milk (NFD), milk protein concentrate, and infant formula will set prices no lower than a level based on the U.S. price for non-fat dry milk. A 55,000 metric tons limit is placed on exports by Canada of skim milk powder and milk protein concentrate the first year of implementation, falling to 35,000 metric tons per year thereafter. Canada also agreed to treat wheat imports in the same manner as domestic wheat for grading and pricing.

The Chapter 19 dispute settlement procedures will be retained in the new agreement. A U.S.-Mexico Trade Agreement was announced by President Trump on August 27, 2018. This agreement includes higher US-Mexico content levels for autos, from 62.5 percent to 75 percent, and a six year review of the agreement instead of a hard sunset. Agricultural tariffs between the U.S. and Mexico will remain at zero. Provisions regarding biotechnology and geographic indications are included.

The chapter on Sanitary/Phytosanitary Standards (SPS) includes scientifically based, nondiscriminatory and transparent food safety standards. The steel and aluminum tariff issues are not covered in the agreement.

Status

On September 30, 2018, the U.S.-Mexico-Canada Preliminary Agreement in Principal on NAFTA Renegotiation was concluded. The agreement will be signed by the three countries on November 30, 2018. Congress can then consider the agreement.

Agriculture and Tax Reform

By American Farm Bureau Federation

Source: https://www.fb.org/files/Taxes-Tax_Reform.pdf

Issue: Passage of the Tax Cuts and Jobs Act in 2017 benefits most farm and ranch businesses and should allow them to build their operations and stimulate the agricultural economy. Important provisions include reduced tax rates, the new business income deduction, provisions to allow the matching of income and expenses, immediate cost recovery and an increase in the estate tax exemption. USDA Economic Research Service documented the expected benefits of the tax reform in its June publication “Estimated Effects of the Tax Cuts and Jobs Act on Farms and Farm Households.”

Many of the pass-through business provisions of the Tax Cuts and Jobs Act are temporary and should be made permanent. More than 98 percent of farm and ranches operate as pass-through businesses – sole proprietorships, partnerships and Sub S corporations. Sole proprietorships mean the owner reports business income and losses on their personal tax return and Sub S corporations gives corporations with 100 or fewer shareholders the benefit of being incorporated while being taxed as a partnership. Failure to extend important pass-through provisions will result in a tax increase for farmers and ranchers and leave them without ways to deal with the cyclical and unpredictable nature of their businesses.

Background:

The Tax Cuts and Jobs Act continues many tax provisions important to farmers and ranchers.

- Stepped-up Basis for Inherited Property
- Cash Accounting
- Deduction for Business Interest Expense (limited when gross receipts exceed \$25 million)
- Continue Like-Kind Exchange for Land and Buildings (ends for equipment and livestock)
- Business Deduction for Real Estate and Personal Property Taxes

The Tax Cuts and Jobs Act contains many permanent provisions that help farmers and ranchers.

- Sect. 179 Small Business Expensing Increased to \$1 million
- Indefinite Carry Forward of Deductions Indexed for Inflation
- Depreciation for Farm Equipment Shortened from 7 to 5 years
- New Flat 21 percent Corporate Tax Rate
- Repeal of the Corporate Alternative Minimum Tax (AMT)

Many provisions that help pass-through business are temporary and should be made permanent:

- Reduced Pass-Through Tax Rates and Expanded Brackets: If not extended, the result will be a tax increase on the majority of farm and ranch businesses (Expires 12/31/25).
- New 20 percent Business Income Deduction (phase-out starts when taxable income exceeds \$315,000/joint): Repealing the business income deduction would expand the tax base of pass-through businesses, erasing much of the benefit of tax reform legislation (Expires 12/31/25).
- Unlimited Bonus Depreciation (Expensing): If not continued, farmers and ranchers will be unable to offset income with deductions for their business expenses. This is especially critical because like-kind exchanges for equipment and livestock are repealed (Phase out starts 2023).
- Doubled Estate Tax Exemption to \$11 million person/\$22 million couple: If the exemption is allowed to revert back more farms and ranches will be subject to estate taxes. And, as long as the exemption level is temporary, money must be spent on estate tax planning rather than on growing farm and ranch businesses (Expires 12/31/25).
- Increased Alternative Minimum Tax Threshold for Individuals: Rollback of the higher AMT threshold will cancel out important deductions and credits put in place by tax reform (Expires 12/31/25).

Background on Agricultural Practices and Food Technologies

Source: https://www.foodinsight.org/Background_on_Agricultural_Practices_and_Food_Technologies

Agriculture has made a tremendous contribution to the quality of American life. It is not just an industry, it is the foundation of our civilization. Agriculture provides the basic essentials for living: the food we eat, the beverages we drink, the clothing we wear, and the materials for our homes. Without agriculture, we would have none of these.

Agriculture also provides us with many of our traditions and values. We celebrate agriculture by attending food festivals, visiting farms and wineries, planting gardens, and watching our favorite cooking shows on television. In the United States, consumers are fortunate to have a food supply that is affordable, safe, plentiful, flavorful, nutritious, and convenient. Thanks to agriculture, we can enjoy a bounty of food.

Crops

U.S. Agricultural Production is Top-Notch

Agriculture plays a valuable role in our everyday lives by not only providing us with food, but also by maintaining a strong economy. On a worldwide basis, more people are in some way involved in agriculture than in all other occupations combined. Agriculture is America's largest industry—not computers or cars or entertainment—employing more than 20 million people in agriculture-related jobs.

In the past century, there have been tremendous changes in American agriculture. Farmers have become extremely efficient and have taken advantage of newer technologies. As a result, they are producing a wider variety of crops and producing them more efficiently. In 1935, there were 6.8 million farms in the United States, and the average farmer produced enough food each year to feed 20 people. In 2002, the number of farms was estimated to be 2.16 million, and the average U.S. farmer produced enough food to feed almost 130 people.

In addition to providing an abundant food supply for domestic markets, U.S. agriculture exports crops to countries around the globe. Trade is essential to the U.S. agricultural sector, with earnings from U.S. agricultural exports accounting for 20 to 30 percent of total farm income. Almost \$60 billion of American agricultural products are exported. As the population increases in the U.S. and throughout the world, there is an even greater demand for the food produced in the United States.

Still agriculture is primarily a family enterprise. Almost 99 percent of all U.S. farms are owned by individuals, family partnerships or family corporations. Less than 1 percent of America's farms and ranches are owned by nonfamily corporations. According to the 2002 Census, the majority of American farms are small-scale, with just over 1.4 million farms having 1 to 179 acres. In comparison, only 77,970 farms are 2,000 acres or more.

Efficient Agriculture = Affordable Food for Consumers

Consumers reap the benefits from American food production capabilities. The percentage of income Americans spend on food has dropped by 50 percent since the early 1900s. According to 2004 statistics from USDA's Economic Research Service (ERS), American families and individuals spend, on average, just 9.5 percent of their disposable income (the portion available for spending or saving) for food. That means in only five weeks the average American earns enough disposable income to pay for their food supply for the entire year.

From Horse & Plow to High-Tech

No other profession or way of life has greater sentimental appeal to the American public than farming—families living in the country, working the land, raising livestock, taking part in a valued tradition. The farming and ranching lifestyle is still seen as a valuable and honorable profession. Much of that appeal is well deserved and still appropriate, but public perceptions of farming simply have not kept pace with realities.

While there are still many small, idyllic farms, there are also dynamic, high-tech/high-volume farm operations that have incorporated numerous mechanical and biological advancements. These advancements have resulted in dramatic changes in farming in the past century. For example, in the 1930s a farmer could harvest (by hand) about 100 bushels of corn in a nine-hour day. Today, combines can harvest 900 bushels of corn per hour.

Developments in science and technology have contributed to better soil, nutrient, water, and pest management, and to more efficient methods of planting, harvesting, storing, processing, and transporting farm products. These developments have resulted in more and better quality food than ever before.

To keep agriculture on the cutting edge, many farmers now implement a variety of technologies, including precision agriculture, remote sensing, computers, the internet, specialized software, global positioning, drip irrigation, and biotechnology. The Global Positioning System (GPS) is a key technology utilized in precision agriculture. Linking to a system of satellites, a farmer uses a receiver to pinpoint his or her position to within inches. The information helps the farmer identify precisely where to plant, and when and where to apply pesticides and fertilizer.

Agricultural advancements also appear in much smaller forms, such as seeds. For farmers to optimize agricultural production, they must have competitively priced, highquality, high-yielding seed varieties with characteristics desired by consumers. Many of these varieties will result from advances in genetics and modern biotechnology.

Modern biotechnology includes a range of tools, including genetic engineering, that are utilized to develop beneficial traits in plant and animal agricultural products. For example, crops such as corn and soybean have been genetically enhanced for improved weed, pest, and disease management, reduced pesticide use, higher-yielding crops, reduced soil erosion, and reduced levels of natural toxins.

With today's technology, farmers are better able to match seed characteristics and production practices to soil type and climate conditions. The result is higher yields with lower input costs from more efficient use of chemicals, fertilizers, and tillage. Ultimately, that means higher quality food at a lower cost for consumers.

Crops for Fuel and Pharmaceuticals

In addition to food, certain crops are providing fuel for American consumers. Biodiesel made from corn, soybeans, or other crops is one of many renewable fuels. Renewable fuels contribute to a cleaner environment, reduce pollution and reliance on foreign oil, and contribute to the rural farm economy by creating commercial markets for crops. With a record production of 2.81 billion gallons of ethanol in 2003, one billion bushels of corn and 12 percent of the grain sorghum crop were used to produce fuel for our vehicles. In addition, some crops are being bred specifically for use in pharmaceutical production. Of course, these crops are not intended for the food supply, and strict regulation is designed to keep them separate from food uses.

Pesticide Use in Agriculture

For decades, pesticides have been used as one of many pest management tools in agricultural production to ensure that high quality, safe, and inexpensive food can meet consumer demand. According to the American Cancer Society, pesticides play a valuable role in sustaining our food supply. They have helped increase crop yields dramatically and made available plentiful grains and a bountiful variety of inexpensive fruits and vegetables.

Indeed, pesticides have important benefits. But there are also food safety and health concerns associated with their use. By their very nature, most pesticides create some risk of harm. Pesticides can cause harm to humans, animals, or the environment because they are designed to kill or otherwise adversely affect living organisms. At the same time, pesticides are useful to society because they kill potential disease-causing organisms and control insects, weeds, and other pests.

The term “pesticides” refers to many types of crop protection products: insecticides control insects; herbicides control weeds; fungicides control fungi, molds, and mildews; fumigants destroy insects, fungi, and bacteria. Both chemical (or conventional) pesticides and biopesticides are used in agricultural production as needed to protect crops.

Pesticide Safety System

Pesticide laws, regulations, and policies ensure that pesticides are used correctly and that sufficient protection is provided to applicators, farmers and farm workers, consumers, and the environment. Several groups are responsible for ensuring the safety of crops treated with pesticides: state and federal government agencies, manufacturers, farmers, crop advisers, applicators, and consumers. Before a pesticide can be used, it undergoes extensive research, development, testing, and governmental review.

Government Agencies

The Environmental Protection Agency (EPA), the United States Department of Agriculture (USDA), and the Food and Drug Administration (FDA) share responsibility for the regulation of pesticides.

EPA and the states (usually the State Department of Agriculture) register or license pesticides for use in the United States and regulate their use. The Food Quality Protection Act (FQPA) of 1996 significantly changed the way EPA regulates pesticides. The requirements included a new safety standard—“reasonable certainty of no harm”—that must be applied to all pesticides used on foods. Before allowing a pesticide to be used on a food commodity, EPA sets tolerances (limits) on how much of a pesticide may be used on food during growing and processing, and how much can remain on food. These tolerances are designed to protect public health and the environment. In recent years, EPA has registered many new, safer/lower-risk pesticides.

The FDA monitors and enforces EPA’s tolerances in domestic and imported foods and animal feeds shipped in interstate commerce. USDA’s Food Safety and Inspection Service monitors and enforces tolerances on meat, poultry, and certain egg products. USDA’s Agricultural Marketing Service administers the Pesticide Data Program, which tests commodities in the U.S. food supply for pesticide residues.

Pesticide Manufacturers

Pesticides must go through some 120 health, safety, and environmental tests to ensure their safety and effectiveness before being registered by the EPA. Development and testing by industry and registration by the EPA takes nine years and costs manufacturers \$152 million to \$184 million for each product.

On the Farm

Farmers are trained to use pesticides responsibly and keep pesticide use to a minimum. Pesticides are an expensive production input, so farmers do not use pesticides unless their potential benefits—such as improved quality, increased production, aid in harvesting, and prevention of crop loss—outweigh their costs of application. By reducing input costs, farmers can increase profit and help keep consumer food products affordable.

Certified crop advisers (CCA) and licensed pest control advisers (PCA) are highly trained and educated individuals that offer crop production and pest management recommendations to farmers. Recommendations address several areas, including the use of pest management materials, worker safety and environmental impacts.

Certain pesticides may be applied only by or under the direct supervision of trained and certified applicators. Applicators must understand pesticide product labels and the proper methods of application to apply pesticides safely and reduce risks to human health and the environment. Pesticide applicators are trained by state Cooperative Extension Service programs and are certified by state pesticide agencies. Training covers safe pesticide use as well as environmental issues such as endangered species and water quality protection.

EPA's Worker Protection Standard for Agricultural Pesticides (WPS) is a federal regulation aimed at reducing the risk of pesticide poisonings and injuries among agricultural workers and pesticide handlers. The WPS contains requirements for pesticide safety training, notification of pesticide applications, notification of workers, use of personal protective equipment, restricted entry intervals following pesticide application, decontamination supplies, and emergency medical assistance.

Protecting Children from Potential Pesticide Risks

Health professionals have paid close attention to the issue of pesticides in the diets of infants and children. The overwhelming scientific consensus of the Surgeon General, the National Institutes of Health, the American Medical Association, the American Cancer Society, the American Academy of Pediatrics, and numerous other health authorities is that the health benefits of eating more produce far outweigh any possible pesticide-related risks.

Furthermore, the American Academy of Pediatrics states, "The risks of pesticides in the diet are remote, long-term, and theoretical, and there is no cause for immediate concern by parents. The risks to children over their lifetime of experiencing the major chronic diseases associated with the typical American diet far exceed the theoretical risks associated with pesticide residues."

The FQPA set stricter standards that require EPA to place particular emphasis on children in making regulatory decisions about pesticides. For example, EPA must build an additional 10-fold safety factor into risk assessments to ensure the protection of infants and children, unless it is determined that a lesser margin of safety will be safe for this population subgroup.

The government is required to upgrade its testing and risk assessment methods to better protect children. EPA carefully evaluates children's exposure to pesticide residues in and on foods they most commonly eat. EPA also evaluates new and existing pesticides to ensure that they can be used with a reasonable certainty of no harm to adults as well as infants and children. Both EPA and FDA currently evaluate dietary patterns and other differences between children and adults before determining whether a substance should be approved for use in or on food.

Animal Agriculture

Animal Production: An Important Part of the Agriculture Industry

Animal agriculture in the U.S. accounts for a significant segment of U.S. agriculture. It includes aquaculture, beef, dairy, goats, poultry, sheep, and swine. According to the USDA's Economic Research Service (ERS), animal products account for the majority (51 percent) of the value of U.S. agricultural products, exceeding \$100 billion per year.

Advances in animal breeding, genetics, and health have increased the quality and quantity of animal protein available to consumers. The per capita U.S. consumption of beef, pork, broiler, and turkey meat combined has risen from about 127 pounds in 1950 to more than 218 pounds in 2000.

The U.S. has the largest feed-cattle industry in the world and is the world's largest producer of beef. Among livestock industries, milk has a farm value of production second only to beef. The U.S. is also the world's third largest producer and second largest consumer, exporter, and importer of pork and pork products. The U.S. poultry industry is the world's largest producer and second largest exporter of poultry meat. During the last two decades, the value of U.S. aquacultural production rose over 400 percent to nearly \$1 billion.

Animal Diseases

Transmissible Spongiform Encephalopathy (TSE's) are rare forms of progressive disorders that affect the brains of animals. They are caused by similar uncharacterized agents that produce spongiform changes in the brain. In animals, specific examples of TSE's include: scrapie, which affects sheep and goats; bovine spongiform

encephalopathy (BSE), which affects cattle; transmissible mink encephalopathy; feline spongiform encephalopathy; and chronic wasting disease (CWD) of mule deer, white-tailed deer, black-tailed deer, and elk. (ref. www.aphis.usda.gov Transmissible Spongiform Encephalopathies (TSE), Veterinary Services, July 2000)

Bovine Spongiform Encephalopathy (BSE) is commonly referred to as “Mad Cow Disease.” BSE affects the central nervous system of cattle. The disease is transmitted when animals are exposed, through feed, to an infected cow’s brain or spinal tissue.

BSE affects only cattle. There is a similar disease called variant Creutzfeldt-Jakob Disease (vCJD), which is found in humans. There have been a small number of cases of vCJD reported, mostly in the United Kingdom. In the U.S. there is no significant risk of contracting the disease through consumption of meat, dairy products, gelatin, or other animal-derived products given the government’s surveillance and protection system. They include effective inspection programs and monitoring systems in place to ensure that beef, food and consumer products derived from cattle are safe. The federal government, beef industry and food manufacturers are working together to ensure a safe food supply for consumers.

Foot and Mouth Disease (FMD) is a severe, and a highly communicable viral disease of cattle, swine and other cloven-hoofed animals. The disease, caused by a virus, spreads rapidly and is one of the animal diseases most dreaded by livestock owners.

FMD is not a threat to human health. There is no evidence that humans can contract the disease through consumption of meat, dairy products, gelatin, or other animal-derived products. FMD viruses can however, be spread by animals, people or materials that bring the virus into physical contact with susceptible animals. The U.S. has been free of FMD since 1929 and the USDA and other federal agencies provide stringent safety measures to keep the U.S. free of FMD.

While FMD does not affect human health directly; any impact would be mostly economic affecting livestock and related industries, including some restrictions on travel.

Highly Pathogenic Avian Influenza (HPAI) can also be referred to as avian influenza and over the years different forms of the disease have appeared from time to time in regions all over the world including the United States. Left untreated, the more virulent forms of avian influenza can devastate an entire flock of chickens.

Currently a type of this avian influenza virus is affecting birds and poultry flocks in Europe and Asia. This specific form of influenza is designated H5N1. The type being reported is highly pathogenic which means it can spread rapidly among an entire flock of birds causing their death. The United States does not currently have the highly pathogenic form of avian influenza, but the USDA is putting safeguards in place to address this form if the disease should arrive on American shores.

According to the CDC, it is possible that the virus could mutate into a human strain of influenza virus. This could result in sustained human-to-human transmission and pandemic influenza. While some people outside the U.S. have become sick with a form of avian influenza, the H5N1 strain has so far only rarely infected humans. For the most part, these people probably became infected with avian influenza by inhaling the virus from infected birds or by transferring the virus from contaminated hands to their mouth.

According to the USDA, CDC and FDA proper handling and cooking provides protection against avian influenza and other viruses and bacteria such as Salmonella and E.coli. Awareness and education about bird flu has increased around the world. The USDA recognizes the potential threat to animal and human health. It has increased surveillance and monitoring efforts to detect, contain, and eradicate any infected birds, before the disease spreads.

It is important to remember that fully cooked poultry products are safe to consume as the avian flu virus would be destroyed by following recommended cooking temperatures. See recommended cooking information from the U.S. Department of Agriculture.

Agricultural Systems

For a variety of reasons, farmers adopt specific agricultural systems—including organic agriculture, Integrated Pest Management (IPM), and sustainable agriculture—that will reduce their use of pesticides and fertilizers and

be more environmentally friendly. Among the reasons is growing public concern about food safety and the potential environmental impact of certain farming practices.

Organic Agriculture on the Rise

The organic industry is increasing in popularity and derives from small and large farms. According to USDA and organic trade groups, the industry is growing between 20 and 25 percent annually for the last several years. U.S. organic food sales reached an estimated \$10.38 billion in 2003, according to an Organic Trade Association (OTA) survey. In comparison, overall U.S. retail food sales—at home and away from home—totaled nearly \$900 billion in 2004, according to USDA's Economic Research Service (ERS).

According to the USDA's National Organic Program (NOP), organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products certify they are from animals that are given no antibiotics or growth hormones. Organic crops are produced without using most conventional pesticides; fertilizers made with synthetic ingredients or sewage sludge; bioengineering; or ionizing radiation. Organic agriculture practices cannot ensure that products are completely free of residues; however, methods are used to minimize pollution from air, soil, and water.

In October 2002, USDA launched the National Organic Standards for agricultural products. It marked the beginning of consistent certification and labeling of organic products. Now all foods that are sold, labeled, or represented as organic have to be produced and processed in accordance to the standards.

In addition, the USDA developed strict labeling rules that apply to raw, fresh products, and processed foods that contain organic ingredients. These rules are intended to help consumers know the exact organic content of the food they purchase. For example, "100 percent organic" means a product contains only organically produced ingredients and "Made with Organic Ingredients" means a product contains at least 70 percent organic ingredients.

Before a product can be labeled "organic," a government approved certifier inspects the farm where the food is grown to make sure the farmer is following all the rules necessary to meet USDA organic standards. Companies that handle or process organic food before it gets to your local supermarket or restaurant must also be certified.

USDA makes no claims that organically produced food is safer or more nutritious than conventionally produced food. Organic food differs from conventionally produced food only in the way it is grown, handled, and processed. Consumers who purchase organically grown and processed foods as a way to reduce the potential exposure to synthetic pesticides and fertilizers should not assume that organic is pesticide free. Insecticides such as *Bacillus thuringiensis* (Bt) and insecticidal soap, and fungicides such as sulfur and copper are used in organic production.

Nanotechnology

Nanotechnology is poised to have a major impact on agriculture and food processing. It could increase the efficiency of agricultural production, improve the efficacy of functional foods (foods delivering benefits beyond basic nutrition), and offer 'smart' food packaging with built-in nanosensors to detect pathogens or contaminants. Nanotechnology is one of the United States government's top research priorities. This pioneering scientific field has the potential to significantly influence our economy and to improve our standard of living. It is predicted that nanotech innovations will play an integral role in our everyday lives.

What in the World is Nanotechnology?

Nanotechnology is the science of working with extremely small particles of matter, 1-100 nanometers in size, to create new products and processes. A nanometer is one-billionth of a meter (about one-millionth the size of a pinhead). This is roughly 10 times the size of an individual atom. A nanometer-sized particle is smaller than a living cell and can be seen only with the most powerful microscopes.

Nanotechnology has been around for decades, but is now emerging as a very promising new technology. Products featuring nanotech materials are already available to consumers, including golf clubs, tennis balls, sunscreens, cosmetics, paints, stain-resistant and wrinkle-resistant clothing, dental bonding agents, and pharmaceuticals.

Some new nanotech products may be food and agriculture related. Numerous food companies are researching nanotechnology applications—and they are counting on these applications to bring safer, more nutritious, more convenient, and more flavorful products to consumers.

Among the nanotechnology research projects include:

- Nanoscale devices and data loggers for detection of pesticides, fertilizers, and biological events significant to the final product quality for the life history of agricultural commodities.
- Environmental issues and agricultural waste challenges that may be addressed with nanotechnological concepts include the extraction of biopolymers from agricultural by-products and the design of nanocatalysts for waste bioprocessing into food, feed, industrial chemicals, biofuels, and energy.
- “Smart Systems” that will allow real-time monitoring and regulation of delivery of constituents (nutraceuticals, nutrients, drug, insecticides, pesticides, fertilizers, vaccines, etc.) to people, animals, plants, insects, microorganisms, soils, and the environment.

National Bioengineered Food Disclosure Standard

By Chris Clayton, DTN Ag Policy Editor - 12/21/2018

Source: <http://northernag.net/AGNews/AgNewsStories/TabId/657/ArtMID/2927/ArticleID/9359/USDA-Releases-National-Bioengineered-Food-Disclosure-Standard.aspx>

USDA released its long-awaited final rule that will require companies to create labels or use technology to inform consumers about food ingredients from bioengineered crops or fish.

Agricultural groups praised the USDA National Bioengineered Food Disclosure Standard, while other groups that had championed biotechnology labeling laws criticized the options companies can use and how USDA parsed which foods should be labeled.

"America's corn farmers need a consistent, transparent system to provide consumers with information without stigmatizing important, safe technology," said Lynn Chrisp, a Nebraska farmer and president of the National Corn Growers Association (NCGA). "Thus, we are pleased with the issuance of these rules and look forward to reviewing the details in the coming days.

"NCGA came together with stakeholders from across the value chain to support enactment of the Bioengineered Food Disclosure Act, because it prevented a state-by-state patchwork of labeling laws, that would have cost U.S. consumers, farmers and manufacturers billions of dollars. We are hopeful that this rule will be a major step in achieving our important, shared goals."

The Grocery Manufacturers Association (GMA), which vigorously fought state biotech labeling laws, praised USDA for making a "sound decision to empower the industry" in its handling of the disclosure mandate.

"Disclosure is imperative to increasing transparency, educating consumers and building trust of brands, the food industry and government," said Karin Moore, GMA's senior vice president and general counsel. "We are pleased that the USDA has now provided a structure for our companies to share this information voluntarily, building a foundation for government to more quickly respond to innovation in food and agriculture in the future."

The rule, which goes into effect in January 2022, lists specific bioengineered foods that are affected, including alfalfa, trademarked Arctic apples, canola, corn, cotton, specific varieties of eggplant, certain varieties of papaya, (pink flesh) pineapple, potatoes, AquAdvantage salmon, soybeans, summer squash and sugarbeets. USDA will be able to add foods to the list down the line.

Text disclosure on a food label requires either "bioengineered foods" or "contains a bioengineered food ingredient." A label would use "bioengineered foods" for a raw commodity or processed food made up of only bioengineered ingredients. A multi-food product that contains one or more bioengineered ingredients would use "contains a bioengineered food ingredient."

A label requires placing "contains a bioengineered ingredient" on an area of the label with material information about the product and large enough to be seen. USDA gives companies options other than using specific language on the label. For instance, a symbol also can be used that includes the word "bioengineered" as part of the symbol.

Companies can also use an electronic or digital link, such as a QR code, for disclosure that must include the statement "Scan here for more food information." Those digital links must also include a phone number to call or a website to look up more information. And consumers also can get a text of the information sent to them. These technology links must eventually bring the consumer back around to see the words, "contains a bioengineered food ingredient."

USDA also states that refined products originating from bioengineered crops do not constitute bioengineered food. The example USDA provides is that a carbonated soda using corn syrup from biotech corn does not trigger a mandatory disclosure that the soda contains a bioengineered food ingredient. Disclosure on those products is voluntary for food manufacturers or processors, and a relief to sugarbeet growers who have argued there are no differences in refined sugar from beets or cane.

"America's sugarbeet farmers commend USDA for thoughtfully crafting a final rule that provides transparency to consumers and clarity to farmers and food manufacturers. Furthermore, this rule does not impose misleading labeling requirements and recognizes that there are no differences between oils, starches, and sugars made from bioengineered or conventional crops," said Richard Gerstenberger of Snover, Michigan, president of the American Sugarbeet Growers Association.

Retailers are responsible for complying with the disclosure rule on bulk products sold in grocery stores.

Smaller manufacturers, those with \$2.5 million to \$10 million in sales, have a few more options for listing the food information on a website.

The Consumer Federation of America (CFA) said the rule "will result in many consumers remaining in the dark about what foods are made with GMOs (genetically modified organisms)." CFA noted the rule uses the term "bioengineered" other than terms consumers may know such as "GMO" or "genetically engineered," which CFA stated "are already in use and which consumers readily understand."

The consumer federation also criticized the rule for not establishing standards for gene-edited foods using techniques such as CRISPR/Cas9 technology.

Food & Water Watch also stated the rule is deceptive and will still keep consumers in the dark about what they are eating. "The rule refers to GMOs as 'bioengineered,' or BE foods. This is a deceptive strategy because most consumers don't know what that means," said Wenonah Hauter, executive director of F&WW. "The symbol that rule allows manufacturers to use in their disclosure suggests to consumers the product is natural and sustainable, when genetically engineered foods are anything but. And the rule's definitions of what triggers labeling are far too limited."

Major farm groups, though, back USDA's approach with statements from the American Farm Bureau Federation, NCGA, the sugarbeet growers, the Corn Refiners Association, the National Council of Farmer Cooperatives, the National Milk Producers Federation and the American Soybean Association.

"Soybean farmers are pleased that USDA took the time to do this rule the right way," said Davie Stephens, a soybean farmer from Kentucky and president of ASA. "We believe that it allows transparency for consumers while following the intent of Congress that only food that contains modified genetic material be required to be labeled bioengineered under the law, with food companies having the option of providing additional information if they choose."



A Wild Idea to Solve the Wild Horse Problem

Written by Hannah Downey and Tate Watkins, - 1/2/2019

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Spanish explorers are credited with first introducing horses to North America in the 1500s. The 83,000 wild horses and burros that currently roam 27 million acres of western public land are descendants of those first American equines, which came to symbolize the pride and wildness of the West. Many of the animals escaped from or were released by those early explorers or, later, by Native Americans, the U.S. Cavalry, or western ranchers.

As homesteaders and public land management agencies spread westward over the centuries, they either drove out or killed wild horses that competed with them for pasture and forage. By the 1970s, in response to concerns from horse advocates about the future of the animals, President Richard Nixon signed the Wild Free-Roaming Horses and Burros Act into effect, directing the Bureau of Land Management (BLM) to manage and protect wild horses and burros.

Today, there are simply too many horses and burros on too little range. With federal protections and no natural predators, the populations of the free-roaming animals have skyrocketed. In many areas, mustangs overgraze to the point that there is no forage left, meaning they literally face the prospect of starving to death on public rangelands. Vegetation and water sources are being depleted from Oregon down to Arizona, and native species such as elk and sage grouse are being displaced.

To promote healthy conditions on the range, the BLM determines what it calls the Appropriate Management Level (AML), which is the number of wild horses and burros that can thrive in balance with other public land resources and uses. Wild horses and burros that exceed AML (which is 26,690) are to be removed from the range, in accordance with the 1971 law, as amended. The current estimated on-range wild horse and burro population (as of March 1, 2018) is 81,951, a 13 percent increase over the 2017 estimate of 72,674 (which doesn't include animals that were removed last year as part of a management action). That means the current West-wide on-range population exceeds AML by more than 55,000. But current populations are more than three times that designated carrying capacity—and are on pace to double every four years.



In an effort to prevent the demise of both wild horses and rangeland ecosystems, the BLM has resorted to gathering excess animals and moving them to off-range corrals and pastures. The agency offers these horses and burros up for adoption to good homes using auctions, but it requires interested adopters to pay a minimum bid of \$125. Though this approach has had a degree of success, nearly 51,000 horses and burros remain in off-range facilities. According to the BLM, the lifetime cost of caring for a single horse in one of these facilities is approximately \$48,000.

The total annual cost to taxpayers for the holding facilities runs to \$50 million—or more than half of the entire Wild Horse and Burro Program budget. The agency has explored using permanent sterilization or even euthanasia

as alternatives to wrangle in the horse populations, but political divisions on the issue have prevented implementing these techniques.

One way to ensure horses neither starve to death on the range nor cost taxpayers exorbitant amounts in off-range facilities is to get more of them adopted into private homes. Last spring, the BLM proposed an innovative approach to do just that: flip the auction script. In a report to Congress, the agency suggested paying potential adopters \$1,000 to take in a horse or burro.

The idea of using incentive payments to achieve sustainable wild horse and burro populations is one that's been researched by PERC fellows Randy Rucker, Tim Fitzgerald, and Vanessa Elizondo. "Why are taxpayers shelling out \$50,000 a head to care for horses whose value is so low that no qualified private horse buyer is willing to offer \$125 for one?" they've asked. Their research suggests that a \$100 payment from the BLM to adopters would likely have been enough to ensure almost all of the animals in long-term holding facilities over the past several decades would have been adopted—a potential savings to taxpayers of \$450 million.

The Bureau of Land Management has decided to implement this idea on a trial basis in 2019. The agency will pay adopters a \$500 first installment 60 days after adoption, once new owners have demonstrated that they're providing quality homes. After a 12-month probationary period to ensure the adopted animals are being treated well, owners will receive title to their horse or burro, and the second \$500 payment will follow 60 days after the title transfer.

The plan has the potential to help improve the lives of wild horses while also benefiting taxpayers. Owning and caring for a horse is not cheap. The \$1,000 payment should promote adoptions as the stipend can help cover veterinary and training costs. This sort of approach has been widely used by animal shelters that offer free adoptions or waivers for veterinary care to help get pets placed in loving homes, and it has potential to make a real difference in the lives of wild horses and burros.

Adoption is clearly a better outcome for a wild horse than starving on the range or living out the rest of its days in an overcrowded corral. For taxpayers, the per-horse savings is undeniable. Spending \$1,000 to find a mustang a good home is orders of magnitude cheaper—and likely much more humane—than caring for it in a government holding facility for the rest of its life.

In addition, taking horses and burros off public rangelands can alleviate major pressures on western ecosystems. Solving the wild horse crisis will allow vegetation to regrow and land to recover from overgrazing, reducing competition for forage and water among other wildlife.

Wild horse and burro management is an issue fraught with emotion and complicated by biological and political concerns. But it's clear that the status quo is failing horses and burros, public rangelands, and taxpayers alike. The saga of the wild horse in America may be playing out in the New West, but it follows a well-worn theme—competition over scarce natural resources often leads to conflict. Paying ranchers, families, or other willing parties to adopt wild horses and burros is a step toward reining in the problem in the 21st century.

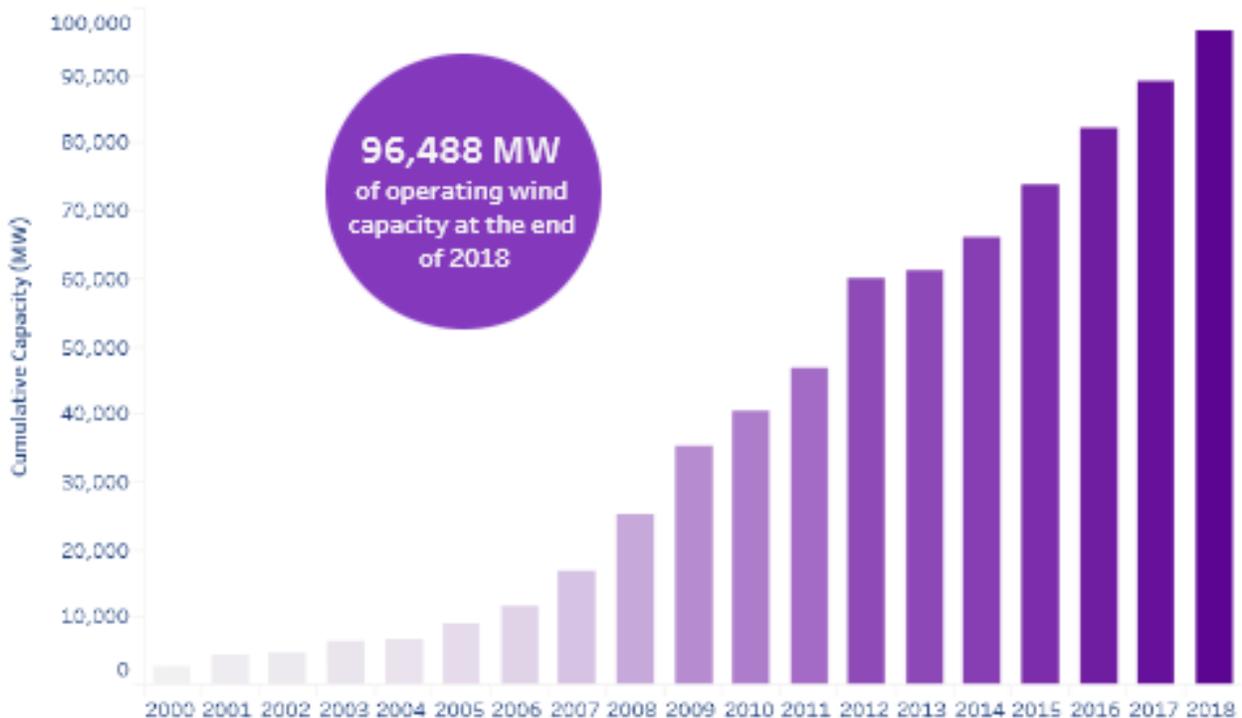
Wind Energy Profile

Source: <https://www.agmrc.org/renewable-energy/renewable-energy/wind-energy-profile>
<https://www.awea.org/wind-101/basics-of-wind-energy/wind-facts-at-a-glance>
<https://www.eia.gov/state/analysis.php?sid=TX>

Overview

According to the U.S. Department of Energy (DOE), wind energy is the world's fastest-growing energy technology. According to the American Wind Energy Association, in 2018 America had over 56,800 utility-scale wind-turbines operating in 41 states, Guam, and Puerto Rico producing 96,488 megawatts of wind-generating capacity. In 2017, the electricity generated was enough to power 24 million American homes and supported 105,500 jobs.

Cumulative U.S. Wind Capacity



Wind energy has been used since the earliest recorded history to move ships, grind grain and pump water. During the late 19th century, windmills were commonly erected in the United States to pump water on farms and ranches. By 1900, small electric wind systems were developed to generate direct current. These systems were abandoned by the 1950s when the extension of the central power grid system, through the Rural Electrification Administration, provided an economic form of electricity. Interest in alternative energy sources reemerged during the oil shortages of the 1970s. Wind energy received more attention by the mid-1980s.

According to the U.S. DOE, the terms wind energy or wind power, “describe the process by which the wind is used to generate mechanical power or electricity.” Kinetic energy from the wind is converted by wind turbines into mechanical power. Wind energy is classified by wind speed. The cost-effectiveness of wind energy is determined by wind speed in addition to the value of the energy a turbine is producing. Available wind power is a function of the cube of the wind speed. If all other factors are equal, a turbine located at a site with 5 meters per second (m/s) winds will produce nearly twice as much power as a turbine located where the wind blows at 4 m/s, according to data from the American Wind Energy Association (AWEA). Geographic location in the United States is a critical factor when considering wind energy. The top 10 states in wind resources are: North Dakota, Texas, Kansas, South Dakota, Montana, Nebraska, Wyoming, Oklahoma, Minnesota and Iowa. There is also growing interest in locating wind farms on offshore locations along coastal states. Wind energy generated 6.3 percent of the nation’s electricity in 2017.

At one time, the United States led the world in wind energy, producing 90 percent of the world’s wind-blown electricity. By 1996, that number had dropped to 30 percent. Wind-powered energy grew slowly in the United States during the 1990s due to electricity deregulation. Utility companies did not know how deregulation would affect new technologies or if the U.S. government would encourage investment into renewable energy projects.

Globally, wind energy capacity increased more than 16 times between 2000 and 2012. Total world wind capacity was 539,291 MW in 2017. Recent wind projects are being developed by private producers and by electric utility companies. One reason for the increased interest in wind power is because of the availability of federal tax credits and incentive payments. In many states, electric utilities are required to produce a percentage of power from renewable energy resources, such as wind. Another benefit to utilities is being able to sell wind-

generated electricity to customers at a premium because it is classified as clean or green power.

Wind turbines can be owned as stand-alone units or connected to a utility power grid. Stand-alone units are typically used for water pumping and for communications or to generate electricity for self-use.

Utility companies are installing multiple wind turbines in groups to form wind plants or wind farms. The utilities use the wind-generated electricity to supply their customers. A growing number of utility companies are buying wind power or owning wind turbines, such as MidAmerican Energy (including PacifiCorp) and Puget Sound Energy.

Demand

Increasingly, utility companies throughout the United States and around the world give customers the choice of voluntarily paying a premium of 2 cents to 3 cents for wind-generated electricity. Green power is the term used for electricity supplied entirely or in part from renewable energy.

At the end of 2010, utilities sold green power to an estimated 1.8 million electricity customers. In 2013 the price of wind energy hit an all-time low at 2.5 cents per kilowatt hour. Wind energy represented nearly 83 percent of total green power sales. On February 17, 2009, the American Recovery and Reinvestment Act of 2009 was signed by President Obama. The legislation includes a three-year extension of the production tax credit and a new program that allows renewable energy developers the option of forgoing the production tax credit and securing a grant from the U.S. Treasury in the amount of a 30 percent investment tax credit. For small wind systems, the recovery bill removed the \$4,000 cap on the small wind investment tax credit. Small wind investors are now allowed to claim a 30 percent investment tax credit for qualified small wind energy property.

The American Recovery and Reinvestment Act authorizes an additional \$1.6 billion of new clean renewable energy bonds to be distributed to tribal governments, public power providers and electric cooperatives to finance facilities that generate electricity from renewable resources.

Supply

Wind energy capacity in the United States is 65,879 megawatts, according to 2014 figures from the AWEA. Utility-scale wind turbines are installed in 39 states. The supply of wind energy in 2013 totals 4.1 percent of the nation's electricity, with up to 25 percent of energy coming from wind in certain states such as Iowa and South Dakota. United States wind power generates enough electricity to power the equivalent of more than 15.5 million homes. The goal of the United States Department of Energy is to power at least 20 percent of the nation's electricity with wind by 2030. The north-south corridor of the United States--Minnesota, Iowa, Nebraska, Kansas and Texas--offers great potential for wind energy generation.

Disadvantages

Wind energy is highly capital-intensive for the equipment and plant construction. Costs can range from \$3,000 to \$80,000 for a small wind turbine, depending on the location, application and service agreement. A large tower and utility-scale turbine can cost \$1 million. Other negative aspects to wind energy include concern over the noise generated by the rotor blades, visual impacts of the towers on the landscape and bird deaths caused by the rotor.

Two other drawbacks to wind power: wind does not always blow when electricity is needed and wind power cannot be stored. The amount of electricity generated varies, depending on the wind speed. According to the AWEA, a typical wind turbine at a wind farm operates 60 to 80 percent of the time, usually at less than full capacity because the wind speed is not at optimum levels. Many times, optimum locations for producing wind energy are located in remote areas, away from electric power customers.

Another disadvantage to wind energy can be the machinery cost, depending on what type and size of turbine is installed. The technology requires a higher initial investment compared to fossil-fueled generators. The U.S. DOE estimates that approximately 80 percent of the cost is the machinery; the rest of the cost is for site preparation and installation. Compared to a smaller model, a larger-sized wind turbine offers economies of scale and can generate electricity at lower costs.

Competitiveness

Wind is regarded as the fastest growing renewable energy technology in the world. Interest and investment in wind energy is increasing because production costs have decreased and because the technology to harness wind

power has improved. Wind is now one of the most competitive sources of renewable energy.

Today's new utility-scale wind projects are being built at a competitive rate approaching that of energy derived from fossil fuels. New wind projects in the United States in windy locations are generating electricity at less than 5 cents per kilowatt. In 2004, costs reached as low as 3 cents to 4.5 cents per kilowatt. In comparison, the cost of producing a utility-scale wind turbine was 30 cents per kilowatt in the early 1980s. According to the AWEA, if environmental costs were included in the costs of electricity generation, wind energy's competitiveness would increase further because of its low environmental impacts. Wind energy produces no greenhouse gas emissions.

According to 2011 data from the Energy Information Administration, 42 percent of the total net generation of U.S. electricity originates from coal. Natural gas-generated electricity accounts for 25 percent followed by nuclear-generated electricity at 19 percent of total electric production; hydroelectrical at 8 percent; and petroleum at 1.0 percent. Other renewables accounted for 5 percent.

When comparing the life-cycle costs of wind generators to fossil-fueled systems, wind energy is more competitive because it requires no fuel and has minimal operating and maintenance expenses. Onshore wind energy has a leveled cost of energy ranging from 6 cents to 12 cents per kilowatt. The weighted average price of wind power, when factoring in the production tax credit, was 4.4 cents per kilowatt hour in 2009, a price that competes with fossil fuel-generated electricity. Coal-produced energy costs range from 4.8 to 5.5 cents per kilowatt. Electricity from nuclear power costs 12 to 15 cents per kilowatt. The cost of natural gas ranges from 5 to 7.5 cents.

Investment/Cost

The cost for a small turbine system ranges from \$3,000 to \$80,000 installed, depending on the size, application and service agreement. A large tower and utility-scale turbine can exceed \$1 million. A general rule of thumb on costs is \$1,000 per kilowatt for utility-scale turbines. Small, residential-scale turbines cost an estimated \$3,000 to \$5,000 per kilowatt. With proper installation and maintenance, a machine should last up to 25 years or longer.

Wind energy offers many benefits despite its higher cost. It is a renewable, clean energy that does not emit air pollutants or greenhouse gases. The wind is a free, domestic resource. Wind energy also benefits communities through economic development by creating jobs, tax revenues and land lease payments for rural areas.

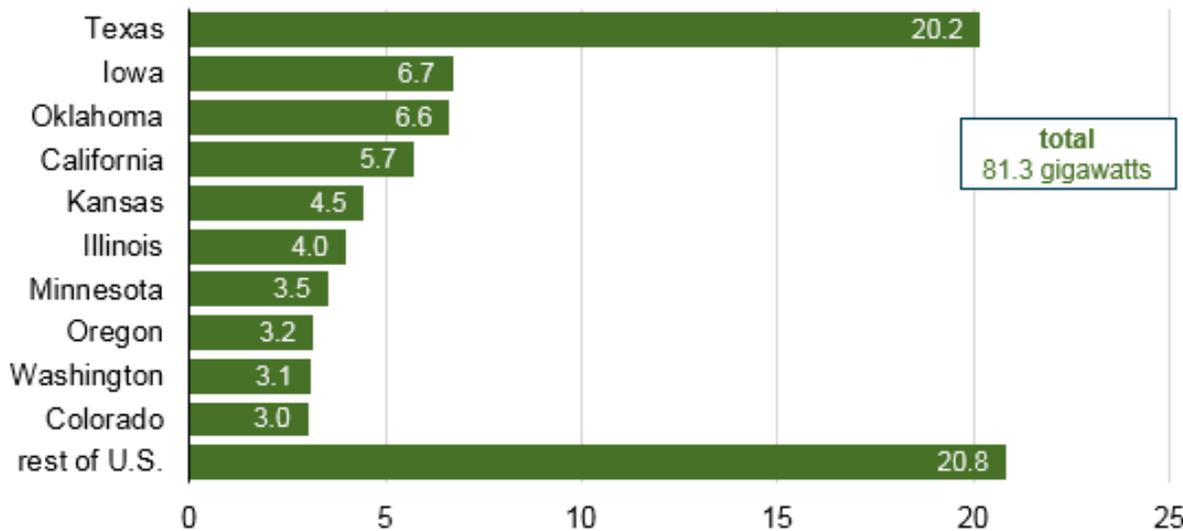
Business Opportunities

Farmers, investors, schools, communities and utility companies own wind energy systems. A system can be stand-alone and create electricity for an individual farm. Under the Public Utilities Regulatory Policy Act of 1978, a wind system may be connected to an electrical grid and excess electricity may be sold to a local utility. Some states now permit net metering.

One way landowners are becoming involved in wind energy is by leasing their air rights to developers for the installation of wind farms. The amount of the lease varies by the location, developer and installation. Leases may last 20 to 30 years. A flat-rate lease pays a landowner a set amount per wind turbine per year. A variable-rate lease pays the landowner a smaller annual payment plus a portion of the revenues generated by the turbines. A landowner should consult with legal counsel before entering an air rights agreement.

Wind energy also has a green tag value. Unlike the green power option for energy customers, a green tag is a value assigned to wind. Green tags, also known as green certificates or renewable energy credits, are a saleable or tradeable commodity representing the environmental benefits of renewable energy production. Green tags have a per kilowatt value that is separate from the energy being produced by a turbine. This value can be negotiated between the turbine owner and energy purchaser.

Operating wind generating capacity by state (as of Dec 2016)
gigawatts



Source: U.S. Energy Information Administration, *Preliminary Monthly Electric Generator Inventory*

Texas Renewable Energy

Renewable energy sources, primarily wind, contribute more than one-sixth of the net electricity generated in Texas. The state provided almost one-fifth of the total U.S. utility-scale electricity generation from all nonhydroelectric renewable sources in 2018, more than any other state. The Public Utility Commission of Texas first adopted rules for the state's renewable energy mandate in 1999 and amended them in 2005 to require that 5,880 megawatts, or about 5 percent of the state's electricity generating capacity, come from renewable sources by 2015 and 10,000 megawatts of renewable capacity by 2025, including 500 megawatts from resources other than wind. Texas surpassed the 2025 goal in 2009, predominantly with wind generating capacity.

Wind accounts for nearly all of the electricity generated from renewable resources in Texas. Texas leads the nation in wind-powered electricity generation, producing more than one-fourth of the U.S. total in 2018. In 2011, Texas was the first state to reach 10,000 megawatts of installed wind generating capacity after the state encouraged renewables by authorizing construction of transmission lines to bring electricity from remote wind farms to urban market centers. At the end of 2017, Texas had about 22,560 megawatts of wind capacity installed, and, by December 2018 installed capacity exceeded 23,300 megawatts. Utility-scale wind facilities in Texas with capacities greater than 1-megawatt accounted for one-sixth of the state's total nameplate generating capacity and produced about one-seventh of the state's net generation in 2017. More than 5,500 megawatts of additional wind generation capacity are under construction.